

REMARKS

Claims 7-17 are pending.

Claims 7-17 are rejected.

Claim 7 is amended.

Applicants request reconsideration of the pending claims.

The Examiner rejected the claims as being obvious in light of deGivry (European Patent App. No. 489,643) in combination with Takehashi (Japanese Patent No. 4-25166). Applicants contend that the rejection suffers from several flaws, any one or combination of which demonstrate the burden for rejection has not been met.

For instance, Applicants contend the rejection suffers from the Examiner's misinterpretation of deGivry. In applying that reference, the Examiner stated that deGivry "does not disclose limiting the support of the upper die to only the region where the dies intersect." (Office Action dated 7/28/04 at p. 2.) Applicants contend deGivry does not merely passively refrain from disclosing limited die support as the Examiner suggests. Rather, deGivry actively touts the exact opposite – emphasizing additional support structures, props, holds, reinforcements, or bolstering under the ends of its crossed chips. (*See* deGivry translation at p. 4, ln. 20-21; p. 4, ln. 25; p. 6, ln. 10-16; p. 6, ln. 25-26; p. 7, ln. 21; FIG. 1, element 20; FIG. 2, elements 20, 34, and 36; FIG. 3, elements 20, 30, and 32.) Applicants contend the Examiner's misinterpretation of deGivry alone is sufficient to demonstrate that the burden for rejection has not been met.

Moreover, comparing deGivry's express teachings to the Examiner's Takehashi reference demonstrates that the patents conflict with each other to the extent that one of ordinary skill in the art would be actively discouraged from combining them. The final product in deGivry includes additional support structures under the ends of its crossed chips in order to prevent cantilevering, as mentioned several times throughout the reference. (*de Givry* translation at p. 4, ln. 20-23; p. 4, ln. 24-26; p. 6, ln. 10-15; p. 7, ln. 26.) Turning to Takehashi, the Examiner interprets that reference as teaching "that the ends of the upper die . . . are not supported." (Office Action dated 7/28/04 at p. 2.) The Examiner further assumes that such teaching lowers manufacturing time and production costs. (*Id.* at p. 3.) Assuming for the moment that the

Examiner's interpretations and assumptions about Takehashi are correct, they are in direct contradiction to deGivry's emphasized teachings specified above. Thus, one of ordinary skill in the art keeping deGivry in mind would view Takehashi's final product as a mechanically unstable device that is undesirably susceptible to cantilevering. Conversely, the ordinary artisan keeping Takehashi in mind would view deGivry's final product as requiring undue process complexity and cost. Such active discouragement against combination further indicates that the burden for rejection has not been met. (See *United States Surgical Corp. v. Ethicon Inc.*, 103 F.3d 1554, 1564, 41 U.S.P.Q.2d 1225, 1233 (Fed. Cir. 1997) (indicating that an obviousness rejection requires that the multiple prior art references suggest to one of ordinary skill in the art to combine the references), *cert. denied*, 522 U.S. 950 (1997); *In re Young*, 927 F.2d 588, 18 U.S.P.Q.2d 1089, 1091 (Fed. Cir. 1991) (indicating that, when the prior art contains conflicting references, the inability of each reference to suggest solutions to one of ordinary skill in the art must be considered).)

Furthermore, the rejection also suffers from the Examiner's misinterpretation of Takehashi. While Takehashi's *final product* may lack support structures under the ends of its upper semiconductor chip, it is noteworthy that, when Takehashi's chip stack is being formed, the chips do indeed have underlying support. (Takehashi at FIG. 2D-2G.) Applicants contend the Examiner's misinterpretation of Takehashi alone is sufficient to demonstrate that the burden for rejection has not been met.

Still further, Takehashi's disclosure concerning the formation of its chip stack necessarily teaches away from the stacking, manufacturing, assembling, and arranging *methods* addressed in the pending claims. Specifically, Takehashi's use of a support surface (unlabelled but illustrated in FIGS. 2D-2G as underlying chips "a" and "b") teaches the exact opposite of the following claim limitations:

- (1) claim 7's requirement that at least one end of an upper die is unsupported as part of a method of stacking a plurality of die;
- (2) claim 9's requirement of refraining from propping at least one of the dies in a region extending laterally from any underlying die as part of a method of manufacturing a multichip module;

- (3) claim 10's requirement of allowing at least one end of at least one of its dies to be free of support as part of a method of manufacturing a multichip module;
- (4) claim 11's requirement limiting direct support for a first die to a region between that first die and a second die, with the second die immediately underlying the first die, as part of a method of manufacturing a multichip module;
- (5) claim 12's requirement of directly holding up at least one of a plurality of dies only in a region that intersects an axis, along which the dies are stacked, as part of a method of assembling a plurality of dies;
- (6) claim 13's requirement limiting reinforcement of at least one of a plurality of chips to regions intersecting an axis, along which the chips are spiraled, as part of a method of stacking a plurality of chips; and
- (7) claim 17's requirement of at least one die orientation that leaves at least one end of at least one of the dies free of bolstering as part of a method of arranging dies in a multi die device.

Dependent claims benefit accordingly. As addressed in the Amendment and Response transmitted 4/12/04, deGivry teaches away from the limits specified above as well. As a result, the deGivry/Takehashi combination only consolidates disclosures that teach away from the claims. Thus, attempting to combine deGivry and Takehashi not only demonstrates that the burden for rejection has not been met but also actively supports the claims' non-obviousness.

CONCLUSION

In light of the above remarks, Applicants submit that claims 7-17 are allowable over the applied references. Therefore, Applicants respectfully request reconsideration of the Examiner's rejections and further requests allowance of all of the pending claims. If there are any matters which may be resolved or clarified through a telephone interview, the Examiner is requested to contact Applicants' undersigned attorney at the number indicated.

Respectfully submitted,



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